

U.S. Appln. No. 10/090,579  
Atty. Docket No. 01-4004C

REMARKS

Claims 1-16 are pending in this application, with claims 1, 4, 7, 10 and 13-16 being independent. Claim 1, 4, 7, 10 and 13-16 have been amended. Favorable reconsideration and allowance are respectfully requested.

The Office Action rejected claims 1-16 under 35 U.S.C. § 103 as obvious from U.S. Patent No. 6,418,199 to Perrone in view of U.S. Patent Application Publication No. US 2002/0067821 to Benson in view of U.S. Patent No. 5,845,276 to Emerson. This rejection is respectfully traversed.

Touch-tone IVR systems, which were introduced over a decade ago, are perhaps the most widespread class of human-computer interfaces. Since their inception, such systems have been adopted enthusiastically, particularly to perform customer-support types of functions, and have permitted their adopters to reduce significantly the amount of manpower required to maintain a call center. When configured properly, IVR systems can allow more customers to be provided with more support and services more quickly than ever before, and can streamline greatly the call center interaction process.

Nonetheless, many calling customers have classically exhibited an antipathy towards IVR systems, viewing them as frustrating and difficult to use. Such problems generally stem not from the fact that interacting with an IVR system is an inherently complex task, but rather from the fact that the systems are often poorly configured, particularly from the point of view of their usability. As a result, it has become extremely desirous to have the tools which allow the manner in which an IVR system is used to be tracked and effectively evaluated, so that the systems usage may be assessed with an eye towards improvement.

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Equally as significant as tracking the use, is visually representing that use in a manner such that it is communicated effectively and concisely to a system evaluator. Such visual representation technique should be flexible and robust enough to communicate to the evaluator even the most complex patterns of user behavior in an IVR system.

Towards that end, present claim 1 is directed generally to a method for visually representing user behavior, in which a complete sequence of events within an IVR system for multiple calls is generated and stored, with the calls being recorded from end to end. Call flow of the IVR system is modeled as a non-deterministic finite-state machine, and the complete sequence of events is provided to the finite-state machine to produce a two-way matrix of several counters.

Significantly, in claim 1, the data from the two-way matrix are visually represented as a state-transition diagram. The state-transition diagram has states and arcs connecting the states, with states representing IVR system prompts and arcs representing user responses to the prompts or actions initiated by the IVR system. These inventive techniques provides the evaluator with a great deal of information regarding user behavior in a concise and comprehensive way.

The Office Action contends that Perrone discloses voice control of a server, and contends that teaching reads on a method of visually representing user behavior. (See, e.g., Office Action at 2). Applicants respectfully disagree: voice control of a server and visually representing user behavior are two very different things.

Perrone relates generally to a system in which a client communicates with a server over a communication channel. At the client side, a telephone connects to an IVR system, with a speech recognizer at the server side. This structure purportedly allows a user

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at the client side to interact with and obtain resources from the server through voice commands.

Figs. 3A through 3E of Perrone show a series of exemplary screen displays, i.e. HTML pages. In the system of Perrone, a user can purportedly interact with these pages, such as, for example, to put in an order to purchase a stock, through voice commands. These displayed screens, however, are of the same type as screens that can be obtained and interacted with conventionally, through mouse clicks and keyboard entries. They do not convey any information at all about IVR system usage. And they are in no way a visual representation of a state transition diagram having states representing IVR prompts and arcs representing user responses to the prompts or IVR actions.

The Office Action also contends that Emerson in its Fig. 4 shows visually representing data from a two-way matrix as a state-transition diagram (See, e.g., Office Action at 4). Once again, Applicants respectfully disagree. Fig. 4 of Emerson is a flow diagram showing an end of the day procedure for a call monitoring program. This diagram is provided in Emerson to illustrate the operation of the program; it is never itself displayed. The diagram illustrates the steps of saving a call log in an archive database, creating a new call log, saving a daily report database in the archive database and creating a new daily report database. As the Examiner will readily appreciate, none of these steps relate in anyway to the visual display of anything, let alone the visual display of a state transition diagram having states representing IVR prompts and arcs representing user responses or IVR actions.

Benson is cited in the Office Action as teaching the generation and storage of a complete sequence of events within an IVR system (See, e.g. Office Action at 4). The Office Action does not contend that Benson teaches the claimed visually displaying feature,

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and of course it does not. Benson does show in Fig. 7 a screen pop for making an order entry in a customer database. But this screen pop conveys absolutely no information regarding IVR system use. Benson, therefore, does not correct the deficiencies of Perrone or Emerson.

Accordingly, Applicants respectfully submit that claim 1 is not obvious from Perrone, Benson or Emerson or their combinations, and respectfully request the Examiner to remove the corresponding Section 103 rejection.

Independent claims 4, 7, 10, 13, 14, 15 and 16 are directed to apparatuses, systems, computer program products or methods that incorporate the salient features of claim 1 discussed above. In particular, all of those claims recite visually representing data corresponding to a complete sequence of events as a state-transition diagram, having states that represent IVR system prompts and arcs representing user responses to the prompts or actions initiated by the IVR system. Those claims, therefore, are patentable for the same reasons as claim 1.

The remaining claims all depend from one or another of the independent claims 4, 7, and 10 discussed above, and each partakes in the novelty and non-obviousness of its respective base claim. In addition, each recites additional patentable features of the present invention, and individual reconsideration of each is respectfully requested.

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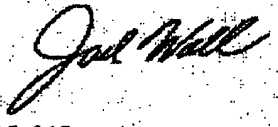
### CONCLUSION

This Amendment After Final Action is believed to place clearly this application in condition for allowance. Therefore, its entry is believed proper under 37 C.F.R. § 1.116 and is respectfully requested, as an earnest effort to advance prosecution and reduce the number of issues. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and passage to issue of the present application.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 07-2347. If an extension of time under 37 C.F.R. § 1.136 not accounted for above is required, such an extension is requested and the fee should also be charged to our Deposit Account

Respectfully submitted,

  
Joel Wall  
Reg. No. 25,648

Date: May 5, 2004

c/o Christian R. Andersen  
VERIZON CORPORATE SERVICES GROUP, INC.  
HQE03H14  
600 Hidden Ridge Drive  
Irving, TX 75038  
(972) 718-4800